



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,290	06/25/2003	Achilles G. Kogiantis	Kogiantis 14-4-7-5	9899
46368	7590	01/29/2007	EXAMINER	
CARLSON, GASKEY & OLDS, P.C.			DAO, MINH D	
400 W MAPLE RD				
SUITE 350			ART UNIT	PAPER NUMBER
BIRMINGHAM, MI 48009			2618	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/29/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/603,290	KOGIANTIS ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	MINH D. DAO	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 03 January 2007.  
 2a) This action is **FINAL**.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-7,9-13 and 15-17 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-7,9-13,15-17 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date: _____	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 01/03/07 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kim (US 7,079,514) and Seo (US 2003/0123396).

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US 7,079,514) in view of Seo et al. (US 2003/0123396).

Regarding claim 1, Kim teaches a method of transmitting information in a communication system having at least one multiple antenna system, the method comprising the step of:

transmitting over N defined time periods long term information comprising a correlation value between at least two antennas that is a function of a signal vector received on the at least two antennas arranged in a particular format and obtained from at least a portion of at least one of measured received information (see abstract; figs. 1-4; col. 3, line 60 to col. 5, line 6; col. 17, line 9 to col. 18, line 43). However, Kim does not mention transmitting over N defined time periods ) where N is an integer equal to 1 or greater. Seo, in an analogous art, teaches transmission time intervals during which channel quality of received signals are measured (see section [0043,0044]). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the teaching of Kim to Seo in order for the combined system to repeat the signal quality measurement for the purpose of obtaining an accuracy for the signal measurement.

Regarding claim 2, the combination of Kim and Seo teaches the method of claim 1 where the step of transmitting long term information comprises the steps of: receiving information over one or more communication channels of the communication system (see Seo, sections [0040,0068]); at least one of measuring or calculating channel parameters from the received information (see Seo, sections [0040,0068]); obtaining long term information from the at least one of measured or calculated channel parameters (see Seo, sections [0040,0068]); arranging the obtained long term information (see Seo, section [0069]); and transmitting the arranged long term information (see Seo, sections [0040,0068]).

Regarding claim 3, the combination of Kim and Seo teaches the method of claim 1 where the long term information is transmitted over a feed back channel of the communication system (see Seo, section [0024]. The uplink channel of Seo reads on the feed back channel of the present invention).

Regarding claim 4, the combination of Kim and Seo teaches the method of claim 1 further comprising the step of transmitting short term information obtained from the measured and/or calculated received information (see Seo, section [0090]).

Regarding claim 5, the combination of Kim and Seo teaches the method of claim 1 where the long term information is transmitted by a base station of a wireless communication system (see Seo, section [0037]).

Regarding claim 6, the combination of Kim and Seo teaches the method of claim 1 where the long term information is transmitted by a mobile that is part of a wireless communication system (see Seo, sections [0024,0040,0068]).

1. Claims 7,9-13,15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US 7,079,514) in view of Seo et al. (US 2003/0123396) and further in view of Walton et al. (US 2006/0039312).

Regarding claim 7, the combination of Kim and Seo, as mentioned above, teaches the limitations of claim 1 but does not disclose that the communication system contains at least one MIMO antenna system. Walton, in an analogous art, teaches a communication facility equipped with MIMO system (see fig. 8A). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the MIMO antenna system of Walton to Kim and Seo in order to for the combined system to channel estimation and to obtain time and frequency synchronizations.

Regarding claim 9, the combination of Kim, Seo and Walton teaches a method of transmitting information in a communication system having at least one multiple antenna system, the method comprising: transmitting over N defined time periods long term information arranged in a particular format and obtained from at least a portion of at least one of measured or calculated received information, where N is an integer equal to 1 or greater (see Kim, see abstract; figs. 1-4; col. 3, line 60 to col. 5, line 6; col. 17, line 9 to col. 18, line 43; Seo, fig. 4; sections [0043,0044]); and transmitting short term information where the long term information is used to inform receiver which of a finite set of codes to use to decode the transmitted short term information. (see Walton, fig. 2; section [0258-0275]).

Regarding claim 10, the combination of kim, Seo and Walton teaches the method of claim 1 where the long term information comprises at least a portion of a channel parameter value (see Seo, section [0068]).

Regarding claim 11, the combination of kim, Seo and Walton teaches the method of claim 10 where the long term information is a 2-bit code representing either a beam formed signal having a particular data rate or a MIMO signal having a particular data rate and such long term information is transmitted over a feed back channel of an EVDV communication system (see Walton, section [0266]).

Regarding claim 12, the combination of kim, Seo and Walton teaches the method of claim 10 where the long term portion is a 3 bit code representing an SNR threshold value (see Walton, section [0266]).

Regarding claim 13, the combination of kim, Seo and Walton teaches the method of claim 10 where the long term portion comprises 3 bits representing C/I decade values that are within a certain range (see Seo, sections [0037,0088]).

Regarding claim 15, the claim includes the limitations as that of claim 9, and therefore is interpreted and rejected for the same reason set forth in the rejection of claim 9.

Regarding claim 16, the combination of kim, Seo and Walton teaches the method of claim 15 further comprising the step of modifying information to be transmitted based on the received long term and related short term information (see see Kim, see abstract; figs. 1-4; col. 3, line 60 to col. 5, line 6; col. 17, line 9 to col. 18, line 43; Seo, section [0037]).

Regarding claim 17, the combination of Seo and Walton teaches the method of claim 15 where a mobile receives the long term information and related short term information (see Kim, see abstract; figs. 1-4; col. 3, line 60 to col. 5, line 6; col. 17, line 9 to col. 18, line 43; Seo, section [0037]).

### ***Conclusion***

2. Applicant's amendment filed 07/19/06 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH D. DAO whose telephone number is 571-272-7851. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MATTHEW ANDERSON can be reached on 571-272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Minh Dao <sup>MD</sup>  
AU 2618  
January 23, 2007

Matthew Anderson  
Supervisor AU2618